

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR801 A		Subject Name		Maritime Law				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to understanding of									
<ul style="list-style-type: none"> <li>• Law of sea, flag state, Commercial law, Admiralty laws</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Introduction:</b> <ul style="list-style-type: none"> <li>• Importance of law, Sources of law. Civil law and Common Law, National and international laws. Need for law in maritime sector. International treaties and conventions.</li> <li>• International organizations, UNCTAD, IMO, ILO, UNCITRAL, CII, etc. and outline of major maritime instruments developed by them.</li> </ul>								3
2.	<b>Law of the Sea:</b> <ul style="list-style-type: none"> <li>• International laws for use of the world's oceans, navigation, fishing, exploration and development of oil and natural gas resources, minerals, scientific research, and protection of marine environment. Territorial seas, inland waters, contiguous zones, exclusive economic zones, continental shelf, high seas.</li> <li>• International regime under UNCLOS-1982 to deal with piracy, other illegal acts and Alternate dispute resolution (ADR)</li> </ul>								15
3.	<b>Law of the Flag State:</b> <ul style="list-style-type: none"> <li>• Provisions of Indian Merchant Shipping Act 1958 with reference to Registration, Administration, Contracts of employment, and abandonment of seafarers and other useful provisions .</li> <li>• The official Log Book. Inspection and reports.</li> </ul>								12
4.	<b>Commercial Laws:</b> <ul style="list-style-type: none"> <li>• Law of contract, formation of contract, legality of contract, void and voidable contract, performance of contract, indemnity and guarantees contract, bailment and liens and law of agency. A general knowledge of shipping practice and documents with particular reference to charter parties and bills of lading.</li> <li>• The law relating to carriage of goods, ship owners liabilities and responsibilities. Sea worthiness. Law of insurance.</li> </ul>								9
5.	<b>Admiralty Law:</b> <ul style="list-style-type: none"> <li>• Admiralty jurisdiction, Mortgage of vessels, priority in settling maritime claims, law of towage, law of pilotage, claims for general average, provisions relating to major</li> </ul>								9

	port trust Act, 1963 and International convention on salvage, Decided cases on admiralty and maritime laws.	
<b>6.</b>	<b>Miscellaneous Laws:</b> <ul style="list-style-type: none"> <li>• Law of collisions of ships, including apportionment of blame, law of forum shopping or forum convenience.</li> <li>• Alternative dispute resolution including marine arbitrations, conciliation and mediations.</li> </ul>	<b>6</b>
	<b>TOTAL</b>	<b>54</b>
Practical content		
Text Books		
1	Shipping and Maritime Laws and its practice in India, - Dr. B.S. Bhesania	
Reference Books		
1	Commentaries on Major Port Trust Act, 1963 - Dr. B.S. Bhesania,	

<b>GANPAT UNIVERSITY</b>									
<b>FACULTY OF ENGINEERING &amp; TECHNOLOGY</b>									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR801 B		Subject Name		Transport & Logistic Management				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
Theory syllabus									
Unit	Content								Hrs
1.	Management principles & practices, Management information system. Human resource management.								8
2.	Managerial economics, Financial accounting, Cost & Management accounting, International financial management								12
3.	International trade & commerce. International transport system, International transport law, Transport economics, import - export documentation & procedure, Multimodal transport, Logistic & Operations management.								12
4.	Quantitative techniques, Operation research, Research Methodology, Strategic management, International marketing, Quality Management Systems in shipping: <ul style="list-style-type: none"> <li>• Definition of quality need of quality in shipping, ISO 9000.</li> </ul>								12
5.	Port And Terminal Management, Port Economics, Logistic & Supply Chain Management, Port Pricing & Finance , Port Marketing & Services								10
	<b>TOTAL</b>								<b>54</b>
Practical content									
Text Books									
1									
Reference Books									
1									

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<b>FACULTY OF ENGINEERING &amp; TECHNOLOGY</b>									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR801 C		Subject Name		CAD,CAM				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
Theory syllabus									
Unit	Content								Hrs
1.	CAD: Computer aided Drafting and tools for graphics; Mathematical tools; Convergence criteria; Design tools like modeling, simulation, spread sheets and use of specialized packages.								27
2.	CAM: Introduction, Features of NC machine tools, CAD to CAM, Industrial Robots, and Computer aided production planning & control; Computer aided inspection & quality control.								27
	<b>TOTAL</b>								<b>54</b>
Practical content									
Text Books									
1									
Reference Books									
1									

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year			2017-18		Effective for the batch Admitted in			July 2014	
Subject code	2MR801 D		Subject Name		Quality Management				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
Theory syllabus									
Unit	Content								Hrs
1.	Introduction: Definition of Quality Management and System, Evolution of Quality, ISO and its structure. Concepts of Quality Control, Quality Assurance, Total Quality Management, Total Quality Control and Quality Management System. Relevance of Quality Management in Shipping.								4
2.	Quality Management Principles: Orientation of the Organization towards Customer, Leadership Qualities, Involvement of people in an Organization, Process approach, System approach to Management, Continual improvement through QMS, Factual approach to decision making, Mutually beneficial supplier relationship.								8
3.	QMS Documents : General requirements of QMS Documents, Quality Policy, Quality Objectives, Quality Manual, Quality system procedures, work instructions and additional documents. QMS Record requirements and control.								12
4.	Measurement analysis and improvement: Internal Auditing procedures, External Auditing procedures. Dealing with non-conforming products. Continual improvement through corrective action and preventive action.								4
5.	Applications of QMS in Shipping: Initiatives of ISMA in improving shipping management through QMS. Co-relation between Quality management and ISM Code. Application of QMS in Maritime Industry. Total quality, & Total Quality Management, Principles of TQM, Core concepts of TQM, Approaches to TQM. TQM Tools and techniques. Barriers and advantages of TQM. Overview of environmental management system and ISO14000.								18
6.	Statistical Process Control: Statistical Process Control history & development. Averages & measures of dispersion. Process variation, variable & attribute data. Use of statistical problem solving tools such as check sheets, histograms, Pareto diagrams, stratification graph, scatter plots, cause & effect diagram.								8
	<b>TOTAL</b>								<b>54</b>
Practical content									
Text Books									
1									
Reference Books									
1									

<b>GANPAT UNIVERSITY</b>									
<b>FACULTY OF ENGINEERING &amp; TECHNOLOGY</b>									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR801 E		Subject Name		Dredging Engineering				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
Theory syllabus									
Unit	Content								Hrs
1.	Dredging processes: Introduction, development of dredging process								4
2.	Dredgers: Early dredgers; first hydraulic dredger; pipeline; dredger speeds; Cutter heads happer dredger; flow of dredge material, type of modern dredgers.								10
3.	Structural members of dredger; name of various parts; watertight bulkhead; stern tube; rudder; bilge and ballast system								8
4.	Dredge pumps; operation and maintenance; emergency repairs.								8
5.	central equipments; dredge heads; dredging tubes; dredging hoses; gimbals rings; suction and delivery pipes and valves; cutter shafts and ladders.								8
6.	Methods for preventing corrosion; logical stiffening periodic inspections and surveys of dredgers hopper barged & equipments.								8
7.	Pipelines anchors and cables; dredging anchors and spuds; davits and derricks, safety equipment; drydocking routines; Floating and shore pipelines; floaters; ball sockets; flexible hoses; frame pontoon.								8
	TOTAL								54
Practical content									
Text Books									
1									
Reference Books									
1									

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FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.1			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR802		Subject Name		Ship Safety and Environment Protection				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	4	0	0	0	4	Theory	40	60	100
Hours	4	0	0	0	4	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>Comply with the TAR Book Competency number 4.2, 14.1, 14.1.1, 16.3, 4, 5</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Marine Environment :</b> <ul style="list-style-type: none"> <li>Marine Environment awareness, marine ecology, seas &amp; coastal areas, discharges to sea &amp; their environment impact, accidental &amp; operational discharges, emission to air from ships, other pollutions, proactive measure to control pollution &amp; maintain environment.</li> <li>Precautions to be taken to prevent pollution of Marine Environment: During Bunkering, loading/ discharging oil cargo, tank cleaning, pumping out bilges &amp; knowledge of construction &amp; operation of oil pollution equipment in Engine Room &amp; on other specialize ships.</li> <li>Responsibilities under the relevant requirement of the International Convention for the prevention of Pollution from ships Annex-I, II, III, IV, V &amp; VI.</li> <li>Requirement &amp; responsibilities under MARPOL, 73/78 (All Annexs, equipment requirement &amp; their operations, documentation, including necessary record books), Ballast water management Convention 2004, Antifouling convention 2001, National Legislations of other countries like Oil Pollution Act-1990.</li> <li>Environment impact of accidental &amp; operational discharge, emission to air from ships, other pollutions, protective measure to control pollution &amp; maintain environment.</li> <li>Emergency situations, actions to be taken for protecting &amp; safe –guarding environment.</li> <li>Marine Environment related Conventions and applications :</li> <li>Overall Regulatory outline and latest amendments to MARPOL 73/78 Convention, Amendments to regulations and latest matters pertaining to Ballast water, Antifouling, Greenhouse gases, CO2 reduction, ship recycling etc., Workshop on pollution prevention measures. London Dumping Convention</li> </ul>								24

2	<b>Safe working practices:</b> <ul style="list-style-type: none"> <li>• Risk Assessment, personal protective equipment, Emergency procedure Entering Enclosed or confined spaces, permit to work systems. Lifting equipments, Hot work, Hazardous substances.</li> <li>• Safety measures for safe working environmental and for W using hand tools, machine tools, and powered hand tools.</li> </ul>	8
3.	<b>SOLAS, 1974 and Amendments :</b> <ul style="list-style-type: none"> <li>• Main Objective, Chapters in Solas and Main Amendments</li> <li>• SOPEP, SMPEP</li> </ul>	16
4.	<b>EMERGENCY SITUATIONS :</b> <ul style="list-style-type: none"> <li>• Checklists, actions and reporting</li> <li>• Main engine damage, steering failure</li> <li>• Contingency plans</li> <li>• Medical aid &amp; assistance</li> <li>• Cargo spills and claims</li> <li>• Medical guides and advice by radio</li> <li>• Including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship</li> </ul>	8
5.	<b>Structural Inspection and Integrity:</b> <ul style="list-style-type: none"> <li>• Fracture, Buckling and Deformation</li> <li>• Inspection of water tight opening</li> <li>• Surveys and Structural defects</li> </ul>	5
6.	<b>Safe Engineering Watch keeping:</b> <ul style="list-style-type: none"> <li>• Routine pumping operations of fuel oil, ballast water, fire pump and cargo pumping system.</li> <li>• Interpretation of functional testes on communication and control system. Maintenance of machinery space log book and the significance of readings taken.</li> </ul>	6
7.	<b>Latest IMO Amendments:</b> <ul style="list-style-type: none"> <li>• Amendment to 2011 ESP code, Amendment to IMDG code</li> <li>• Operational compliance with NOx Tier III emission control area</li> <li>• Amendments to the NOx Technical Code related to the requirements of the testing of gas-fuelled engines and dual fuel engines were adopted</li> <li>• Guideline for the categorization of Noxious liquid substance</li> <li>• Qualification and Training requirement for crew IGF code certified vessel</li> <li>• Polar code and polar safety certificate, Amendment to Regulation 12 of MARPOL Annex I</li> <li>• Concerning Oil residue ( sludge) tank</li> <li>• Amendment to IMSBC code, IGF code</li> <li>• Installation of P/V valves, Air quality system in ventilation system</li> <li>• Discharge requirement of sewage in special area for passenger vessel</li> <li>• Operational and structural requirement in Polar water for MARPOL Annexes,</li> </ul>	5
	<b>TOTAL</b>	<b>72</b>



Practical content		
Text Books		
Reference Books		
1	Question & Answers of marine Diesel Engines	- John Lamb.
2	Marine Electrical Practice	- G.O.Watson
3	Marine Auxiliary Machines	- D.W.Smith
4	Running & Maintenance of Marine machinery	- IME Publication

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Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2013	
Subject code	2MR803		Subject Name		Marine Automation and Control				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4	0	1	0	5	Theory	40	60	100
Hours	4	0	2	0	6	Practical	25	25	50
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>Comply with the TAR Book Competency number 6.1.1e, 6.1.2a,b,c &amp; 6.1.3a,b</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Control Fundamentals :</b> <ul style="list-style-type: none"> <li>Terminology, Open Loop and Closed Loop System</li> <li>Differential Lag, Radio Control, Cascade Control, Transfer Lag, Feed Back.</li> <li>Three Term Control System.</li> <li>Ziegler – Nichols Method</li> <li>Adjust and Observe Method</li> </ul>								12
2.	<b>Automatic Control Theory :</b> <ul style="list-style-type: none"> <li>Process Control, Feed Back, Two Step (On — Off) Control, Modulating Control, Off Set or Droop, Desired Value, Set Value, Proportional, Integral and Derivative Control, Proportional Band, Split Range, Ratio and Cascade Control, V-I, I-V, P-I, I-P Convertors. Flow chart for Automatic control system</li> <li>Automatic Controllers: Functions of a pneumatic Proportional, Integral and Derivative Action Controllers, Stacked Type Controllers, Controller Adjustments, Relays. Electric &amp; hydraulic Servo Motors.</li> <li>Features of hydraulic and pneumatic control equipments</li> </ul>								12
3.	<b>Correcting Units:</b> <ul style="list-style-type: none"> <li>General familiarization with Diaphragm actuators, Valve-petitioners, piston actuators, Electro-pneumatic transducers. Electro-hydraulic actuators and Electric actuator control valves</li> </ul>								10
4.	<b>Measuring Devices:</b> <ul style="list-style-type: none"> <li>Pressure Measurements</li> <li>Level Measurement</li> <li>Temperature Measurement</li> <li>Signal Transmitting Devices: Flapper Nozzle, Electro Pneumatic signal converter, Variable Inductance and capacitance transducer etc.</li> </ul>								10
5.	<b>Application of Controls on ships :</b> <ul style="list-style-type: none"> <li>Functions and mechanism of automatic control for main engine &amp; auxiliary machinery including generator distribution systems, steam boilers, oil purifier,</li> </ul>								18

	<p>refrigeration system, pumping and piping systems, steering gear system, cargo-handling equipment and deck machinery.</p> <ul style="list-style-type: none"> <li>• Marine Boiler-Automatic Combustion control, Air/fuel ratio control, Simple feed water proportional controller , steam pressure control, fuel oil temperature control,</li> <li>• Engine-Temperature of lubricating oil, jacket/piston cooling water and scavenge air, fuel oil viscosity control, Instrument for UMS classification.</li> <li>• Automatic control for steering gear system.</li> <li>• UMS automation &amp; control.</li> <li>• PLC : Input and Output Systems and controls. Boolean Logic</li> <li>• Programmable Logic Controllers, Integrated automation control and monitoring (ICAMS)</li> <li>• Computer programmable controller, Relay circuit unit, Digital sequential control devices, Control mechanism of PLC.</li> <li>• Software version control -PLC, Micro – Controllers, digital technique.</li> <li>• LAN , E-Learning</li> </ul>	
6	<p><b>Various automatic control methodology and characteristics:</b></p> <ul style="list-style-type: none"> <li>• Learn construction, characteristics and operations of electrical testing and measuring equipment like volt meter, ammeter, meggers, frequency meter, ohm meter, watt-hour meter, synchroscope.</li> <li>• Study construction, application and calibrations of various sensors, transducers and transmitters and manipulator elements used on board ship like pressure sensor, temperature sensor, flow sensor, level sensor, and r.p.m. Sensors, torque sensors, vibration sensors, photo sensors, and water salinometer.</li> <li>• Pneumatic and electrical transmitters and receiver,</li> <li>• Study fundamental of automatic control systems comprising measurement of process value, transmission of signals and manipulator elements</li> </ul>	10
	<b>Total</b>	<b>74</b>
<b>Practical content</b>		
<p><b>Practical:</b></p> <ol style="list-style-type: none"> <li>1. Operation and utility of a 3 Term (P + I + D) Pneumatic controller for Temperature, Study of Pressure, Flow and Level transducers.</li> <li>2. Hydraulic trainer unit to be familiar with hydraulic equipments.</li> <li>3. Pneumatic equipments on pneumatic trainer unit.</li> <li>4. Study the operation of fire detection unit using Ionization chamber type detector. Study of instruments under “measurement devices”</li> </ol> <p><b>Control Lab. Experiments:</b></p> <ol style="list-style-type: none"> <li>1. Operation and utility of a 3 Term (P + I + D) Pneumatic controller.</li> <li>2. Microprocessor controlled DC &amp; AC machines,</li> <li>3. Study of SCADA system and PLC.</li> </ol>		
<b>Text Books</b>		
1	Instrumentation & control Marine	- G.T.Roy
2	Marine Control Practice	- D.T.Tylor
<b>Reference Books</b>		
1	Control system for Technicians	- G.T.Brayan (ELBS)
2	Instrumentation and control Systems	- Leslie Jackson

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## FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology			Branch/Spec.	Marine Engineering				
Semester	VIII			Version	2.0.1.0				
Effective from Academic Year		2017-18		Effective for the batch Admitted in			July 2014		
Subject code	2MR804		Subject Name		Principle of Management				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4	0	0	0	4	Theory	40	60	100
Hours	4	0	0	0	4	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>• Comply with the TAR Book Competency number 1.4.1, 2, 3, 4 &amp; 5</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
<b>1.</b>	<b>Introduction to Management Principles &amp; Practice:</b> <ul style="list-style-type: none"> <li>• Definition and objectives of sound management. Need for Sound Management Principles and Practice &amp; Growth of Modern management thought, Management functions, Process Planning, Corporation / Long term &amp; tactical strategy, Policy distribution, SWOT Analyses, Organizing - definition / illustration Staffing – manpower, planning, Directing - illustration, Controlling, parameters, application &amp; Co-ordination; communication – efficient process model, communication &amp; barriers, inter-personnel communication skill.</li> <li>• Developing Organization Structure. Various types of organizational structures - Line / staff /matrix, centralization vs. decentralization of decision making, distinction between authority / responsibility / accountability, Basic principles of delegation / empowerment of employees Authority &amp; Responsibility. Boundaries of Authority.</li> </ul>								<b>12</b>
<b>2.</b>	<b>Accounting &amp; Finance Management:</b> <ul style="list-style-type: none"> <li>• Methods of Capital formation &amp; Control of Working Capital, How to read balance sheet / Profit / Loss, Budgetary Control &amp; standard costing - Favourable / Adverse variances. Continuous &amp; Discounted Cash Flow &amp; Project Appraisal.</li> <li>• Break even Analysis, Cost Benefit Analysis., Methods of Depreciation Factory Costing, Estimating, Balance Sheet, Financial &amp; Physical Ratios; Project &amp; Budgetary Control.</li> </ul>								<b>12</b>
<b>3.</b>	<b>Production &amp; operations Management:</b> <ul style="list-style-type: none"> <li>• Factors of production, Distinction between products &amp; services, Types of production system viz. Jobbing / Lot / Mass. Functions of Production Planning and Control, Product Development Principles, Standardization, Simplification &amp; Specialization, Plant Layout, Product / Product, Logistics &amp; supply chain / management. Integrated material management - Functions of material planning, inventory control, safety stock / cycle stock, purchase / stores performance, measurement Parameters, standardization / codification, waste control. Introduction to Operations Research.</li> </ul>								<b>12</b>

	<ul style="list-style-type: none"> <li>• Liner Programming, Distribution Methods, Network Technique in Management - Critical Path Method (CPM), Programme Evaluation &amp; Review Technique (PERT). Resources Allocation &amp; Loading smoothing, Operational Sales Forecasting; Works study, Job Evaluation &amp; Merit Rating.</li> <li>• Total Quality Management - Quality Control, ISO 9000 series, Preventive /condition based Maintenance &amp; spare management.</li> </ul>	
4.	<b>H.R.D.:</b> <ul style="list-style-type: none"> <li>• The personnel Function, Selection &amp; Recruitment, Role of Psychological Tests in Recruitments, Training of employees, Performance Appraisal &amp; counseling, Reward System, Legal Requirements and Regulation of Working Condition, Employer's Liabilities for Health and Safety, MBO, Leadership / Group Dynamic and Discipline.</li> <li>• Motivation theories and incentives, Maslow's hierarchy of needs theory, X and Y theory - Herzberg's Hygienic and motivational theory, Elton Mayo's contribution. Problem of Accident – Preventions, Fatigue, Relation with, Union &amp; Workers Participation in Management.</li> </ul>	<b>10</b>
5.	<b>Ability to apply task &amp; work load management :</b> <ul style="list-style-type: none"> <li>• Communication, team building, planning &amp; co-ordination, situational awareness, assertiveness and leadership, personal assignments time &amp; resource constrains. Resources including for ERM, Prioritization of resources. Effective communication on-board &amp; ashore.</li> </ul>	<b>6</b>
6.	<b>Difference between Domestic and foreign trade.</b> <ul style="list-style-type: none"> <li>• Basis of International Trade- theories. Free-Trade Vs Protection. Balance of payments - components, causes of deficit, steps to correct deficit.</li> <li>• Exchange-Rates: Types, determination, Devaluation of currency. Free-convertibility of currency with reference to Indian Rupee. Functions of I.M.F, World Bank, W.T.O.</li> </ul>	<b>6</b>
7.	<b>Economics :</b> <ul style="list-style-type: none"> <li>• Importance of economics in Marine Engineering study</li> <li>• Basic economic concepts</li> <li>• Demand and supply analysis</li> </ul>	<b>6</b>
8.	<b>Shipping Routes &amp; Ports:</b> <ul style="list-style-type: none"> <li>• Major Shipping Routes &amp; Ports, Types, Problems, factors for good port. Major &amp; Minor ports of India, their location and importance.</li> <li>• Deep-sea fishing, Major sea-fishing zones, Off-shore oil producing zones.</li> <li>• India's overseas Trade and Economic Importance with reference to Economic zones.</li> </ul>	<b>10</b>
	<b>TOTAL</b>	<b>54</b>
Practical content		
Text Books		
1	Modern Office Management	- Mills, Standing ford, Appleby
Reference Books		
1	Economics	- Gangopadhyay
2	Corporate Transformations without Tears	- Dr. L. R. Chary

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		Marine Engineering		
Semester		VIII			Version		2.0.1.0		
Effective from Academic Year			2017-18		Effective for the batch Admitted in			July 2014	
Subject code		2MR805		Subject Name		Marine Machinery System and Design			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	1	0	3	Theory	40	60	100
Hours	2	0	2	0	4	Practical	25	25	50
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>Comply with the TAR Book Competency number 4.4 &amp; 4.6</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Design Considerations:</b> <ul style="list-style-type: none"> <li>Following design considerations are to be taken into consideration while designing marine machinery system: Manufacturing methods, Castings, Forgings, Fabrication &amp; Plastic Moulding. Machining Tolerances, surface finishes:</li> <li>Application to Basic design principles in respect of Function Available materials, Production methods, Economics, Aesthetic appeal. Initial and Servicing costs. Analysis of force, Flow through an Assembly and its effect, on the design. Design with reference to Repairs and reconditioning specifically “at sea” work with its normal restrictions and limitations.</li> </ul>								6
2.	<b>Marine Machinery Component Designs &amp; Drawing:</b> <ol style="list-style-type: none"> <li>Rudder Carrier Bearing</li> <li>Full bore boiler safety valve</li> <li>Oil Fuel Strainer</li> <li>Automatic Valve</li> <li>Stern Tube &amp; Tail Shaft</li> </ol>								20
3.	<b>Computer aided design:</b> <ul style="list-style-type: none"> <li>Analysis of stress ,strain , vibration ,thermal stress , deflection through method of Finite Element Analysis by use of various software like MSC NASTRAN, I-DEAS , AUTO-CAD ,Pro-engineer.</li> </ul>								6
4.	<b>Design of Bearing &amp; Seals:</b> <ul style="list-style-type: none"> <li>Sliding contact bearings: Journal bearings, thrust bearings, friction in journal bearings, bearing loads, bearing design using various equations. Thermal Equilibrium.</li> <li>Rolling Contact Bearings: Load ratings, types of radial ball bearings, selection of bearings, lubrication of ball and roller bearings, methods of failure, Seals - Selection and application of seals.</li> </ul>								4

5	<p><b>Operation of propulsion plant machinery:</b></p> <ul style="list-style-type: none"> <li>Start up and shut down main propulsion and auxiliary machinery including associated systems.</li> <li>Operating limits and maintaining safety, efficient operation and performance.</li> <li>Departure/arrival checklist</li> </ul> <p><b>Operation of auxiliary machineries:</b></p> <ul style="list-style-type: none"> <li>Procedure for starting up of (a) Purifier (b) Compressors (c) Boilers (d) Pumps (e) Generators (f) Refrigerating plants</li> </ul> <p>Checks to be made while operating above machineries</p>	7
6	<p><b>The use of appropriate specialized tools and measuring instruments</b></p> <ul style="list-style-type: none"> <li>Specialized tools for overhauling diesel engines. Removing/renewing cylinder head, cylinder liner. Fuel pump and fuel injectors, bearings, removing piston rings. Gauges used for measurement of these component. Overhauling pump and other auxiliaries. Overhauling purifier. Overhauling heat exchanger. Use of: torque spanner and hydraulic tools. Use of wear down gauges for stern tubes bearings. Tools used for measuring rudder, propeller drop.</li> </ul>	7
7.	<p><b>Maintenance and repair of marine electrical system</b></p> <ul style="list-style-type: none"> <li>Periodic and breakdown maintenance of switch board, starters, circuit breakers, DC electrical systems. Battery maintenance and charging, remote automatic control equipment</li> <li>Interpretation of electrical and simple electronic diagram, reading block diagram, detailed wiring diagram, locating components in actual circuits.</li> <li>Logical 6 steps troubleshooting procedure, Differences a need for actual testing and simulation testing and its limitations.</li> <li>Essential requirements for fault prevention and fault location, Fault finding techniques, Alarms and signals from various probable faults like earthing, short circuit, low insulation, overloading etc., Action to be taken on detection of faults.</li> <li>Ratification methods for different faults.</li> </ul>	10
9.	<p><b>Interpretation of piping, hydraulic, pneumatic diagram.</b></p> <ul style="list-style-type: none"> <li>Symbols and convention use in preparing piping diagram, hydraulic, and pneumatic circuit diagrams.</li> <li>Main engine pneumatic manoeuvring control diagram.</li> <li>Deck machinery hydraulic operated system diagram.</li> <li>Remote controls of valves, watertight doors etc....</li> </ul>	6
10	<p><b>Classification Rules for machinery survey</b></p> <ul style="list-style-type: none"> <li>Survey Arrangement for Machinery PMS (a) Annual survey and Audit of maintenance under PMS (b) All components can be surveyed by Chief Engineer and credited by Class Surveyor during Annual survey.</li> <li>Manageable breakdowns and emergency repairs.</li> </ul>	6
	<b>Total</b>	<b>72</b>
Practical content		
Text Books		
1	Reed's, Engg. Drawing for Marine Engineers - Vol 11 - H. G. Beck	
Reference Books		
1	Machine Design - Pandya& Shah	
2	Marine Engineering - Hamngton	

<b>GANPAT UNIVERSITY</b>									
<b>FACULTY OF ENGINEERING &amp; TECHNOLOGY</b>									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.1.0.0			
Effective from Academic Year	2017-18				Effective for the batch Admitted in	July 2014			
Subject code	2MR806		Subject Name		Marine Workshop - III & Project				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	0	0	3	0	3	Theory	0	0	0
Hours	0	0	6	0	6	Practical	50	50	100
Pre-requisites:									
Learning Outcome:									
The cadets should prepare a project under guidance of one faculty member of the institute and should write a technical paper on it. Final marks will be calculated from the external and internal assessment. Along with presentation and seminar.									
Theory syllabus									
Unit	Content								Hrs
Practical content									
Text Books									
Reference Books									



GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology				Branch/Spec.	Marine Engineering			
Semester	VIII				Version	2.0.1.0			
Effective from Academic Year		2017-18			Effective for the batch Admitted in			July 2014	
Subject code	2MR807		Subject Name		Ship Operation and Logistics				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>Comply with the TAR Book Competency number: 2.3, 3.4</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Brief history of Shipping:</b> <ul style="list-style-type: none"> <li>Modern shipping Practice. Marine vehicles and cargo, care of cargo against damage. Development in shipping and cargo handling Multimodal transportation, Factors affecting universal adoption.</li> <li>Liner and tramp shipping services.</li> </ul>								4
2.	<b>Merchant Shipping Act, 1958</b> <ul style="list-style-type: none"> <li>Owner of the vessel, ship's papers and procedures. Pilotage, Flags of discrimination and their effects on shipping. Duties regarding Marine pollution, Collision of vessels, Explosion in dangerous goods, fire on board on ships. Vessels in distress. Shipping causalities, penalties under Merchant Shipping Act, 1958.</li> <li>Marine Fraud : Genesis and Prevention.</li> <li>Indian Shipping: Current scenario and few case studies.</li> </ul> Marine conventions :1) International convention on salvage 1989, Lloyds Standard Form of Salvage Agreement (LOFA2000) 2) Convention on limitation of Liability of maritime claim 1976. 3) MLC (2006)/ UNCLOS/WHO.								14
3.	<b>Conference systems:</b> <ul style="list-style-type: none"> <li>Organization&amp; concerns Shippers Council. Chartering, Charter parties. Theory of freight rates and fares.</li> <li>Rate fixation machinery and government control Responsibilities of ship owners &amp; charters.</li> <li>Tanker charting. Freight rates &amp; Fares – various terms, influencing factors, market pricing.</li> </ul>								4
4.	<b>Bill of Lading:</b> <ul style="list-style-type: none"> <li>Function &amp; Uniqueness &amp; related problems. Carriage of goods by sea act. Cargo Surveys and protests. Hague Rules, Hague Visby Rules.</li> </ul>								4
5.	<b>Marine Insurance:</b>								6

	<ul style="list-style-type: none"> <li>Underwriting and loss adjusting principals applied to Marine cargo Insurance. Hull/ machinery policy, particular average. General average, P &amp; I Clubs- making claims, Proximity clause, Deviation Clause, Cargo Insurance, etc.</li> </ul>	
<b>6.</b>	<b>Shipping Companies:</b> <ul style="list-style-type: none"> <li>Organizational structure, restructuring on the basis of functional coherence, Ownership Companies, ship management companies.</li> <li>Turnaround strategy for sick shipping companies. Ownership of vessels, Shipping Company and its administration r/w Companies Act 2013.</li> </ul>	<b>6</b>
<b>8.</b>	<b>Ship Operations:</b> <ul style="list-style-type: none"> <li>Planning and sailing schedules, Influencing factors, Unbalance in sea trade, counter-action.</li> <li>Voyage estimation, Manning of ships, engagement &amp; discharge to crews, wages and Economics factors.</li> </ul>	<b>6</b>
<b>9.</b>	<b>Commercial Shipping Practice:</b> <ul style="list-style-type: none"> <li>Sign on and sign of crews, D.L.B. Seaman's welfare, INDOS Number etc.</li> </ul>	<b>4</b>
	<b>TOTAL</b>	<b>54</b>
Practical content		
Text Books		
1	Shipping practice - Stevens	
Reference Books		
1	Managing ships	- John M. Downward
2	Advanced shipboard management	- Capt. Dara E. Driver
3	SOLAS 1974	- IMO publications
4	MARPOL 1973/78	- IMO publications
5	STCW 2010	- IMO publications
6	Shipping Management	- G. Raghuram
7	Ship Operation & management	- Dr.K.V.Rao

\*\*\*\*\* END of Semester VIII \*\*\*\*\*